DRANETZ ADENDUM
626-PA-6001 (OPT. 101 2102)
SINGLE PHASE AC MONITOR
VOLUME I

TM-106705-A

IMPORTANT NOTICE

The accessories supplied with this unit are an integral part of its operation. The loss, damage or misplacement of the accessories may result in it not being completely operational or usable.

All accessories must be returned to Electro Rent at the termination of the rental period.

Failure to return all accessories complete and in usable condition will result in costs of replacement accessories.

ELECTRO RENT CORPORATION
Call Toll Free
(800) 423-2337 Calif. (800) 232-2173

WARNING

Because of possible shock or fire hazards, connection of this instrument should be performed in compliance with the National Electrical Code (ANSI C1) and/or any other requirements which may be applicable to the user.

Installation, operation, and maintenance should be performed only by qualified personnel.

TM-106705-ADD

ADDENDUM TO TM-106705

VOLUME 1

OPTIONS 101 AND 102

626-PA-6001

SINGLE PHASE AC MONITOR

1 May 1983

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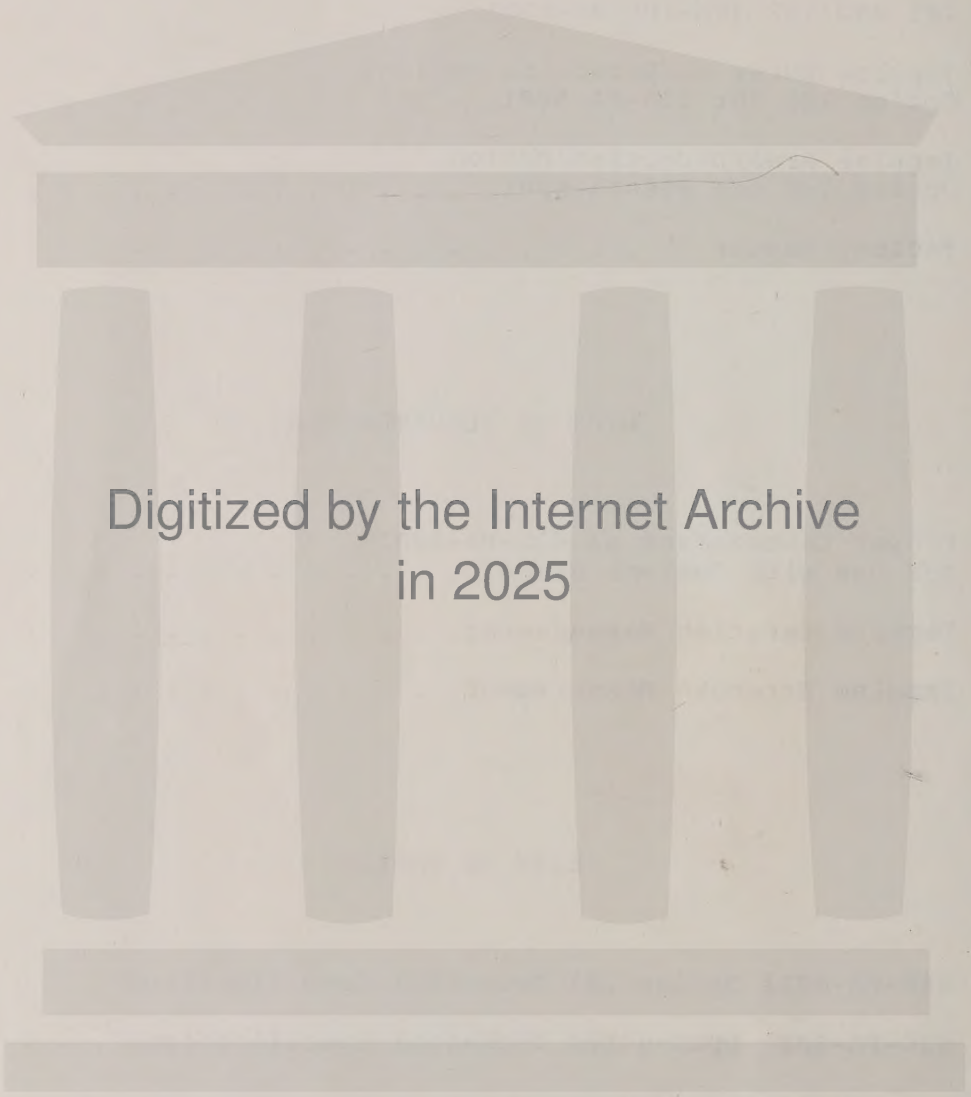
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1 IMPULSE DURATION/DIRECTION OPTION, OPTION 101 FOR 626-PA-6001 SERIES (NOT COMPATIBLE WITH OPTION 102)

1.1 Introduction

The following paragraphs describe the differences between the 6001 with Option 101 and the standard 6001.

NOTE

The following data supersedes that found in TM-106705 unless otherwise stated.

1.2 Purpose

Option 101 has no effect on the line frequency measurements of the 6001 described in the basic manual (Volume 1 of TM-106705). It also does not affect the measurement of impulse polarity and peak voltage. Option 101 is designed to provide information on impulse duration. In addition, if the current probe is used, direction of origin will be determined for impulses having a current of 1 Amp or greater at the time of measurement.

1.3 Equipment Characteristics

Technical specifications for Option 101 are listed in Table 1. All specifications for the 6001, listed in Table 1 of TM-106705, still apply.

Table 1. 626-PA-6001 Option 101 Technical Specifications

IMPULSE DURATION

Range: 1 uSec to 1000 uSec

Accuracy: ±6% of reading ±0.3% F.S. for 1/2 sinewave pulses up to 100 uSec duration greater than 100 Vpk.* Typically -10% at 200 uSec, -20% at 400 uSec, -50% at 1000 uSec.

* 100 Vpk on 200 Vrms Range
200 Vpk on 400 Vrms Range
400 Vpk on 600 Vrms Range

Timing Reference Points: Start at 25V** - stop at 30% of Vpk.

** 25V on 200 Vrms Range
50V on 400 Vrms Range
100V on 600 Vrms Range

Table 1. 626-PA-6001 Option 101 Technical Specifications (Cont'd.)

Minimum Impulse Voltage:	50 Vpk on 200 Vrms Range 100 Vpk on 400 Vrms Range 200 Vpk on 600 Vrms Range

IMPULSE DIRECTION OF ORIGIN

Minimum Impulse Current:	1 Amp for 0.1 uSec before and after measurement.
Minimum Impulse Voltages:	50 Vpk on 200 Vrms Range 100 Vpk on 400 Vrms Range 200 Vpk on 600 Vrms Range

1.4 Installation in Mainframe

The module is installed in the mainframe in the same manner as the standard 6001 described in TM-106705.

1.5 Connections to the Module

Connecting the 6001 to the line to be monitored is the same as described in TM-106705. If impulse direction information is required, the current probe must be connected in the following manner:

a.) Turn off AC power to the line that is to be monitored.

b.) Attach the current probe connector to its mating connector on the rear panel of the 6001.

c.) Install current probe on the line which is connected to the "+" voltage terminal of the corresponding channel, being sure that the LOAD and SOURCE markings on the probe are oriented such that SOURCE is toward incoming power. Proper connections are shown in Figure 1.

d.) Reapply AC power.

Note: Printouts of impulse direction of origin will correlate with the orientation of the LOAD and SOURCE markings on the current probe.

1.6 Operating the 6001 With Option 101

Operation of the 6001 with Option 101 requires no additional programming steps. Programming is the same as described in TM-106705.

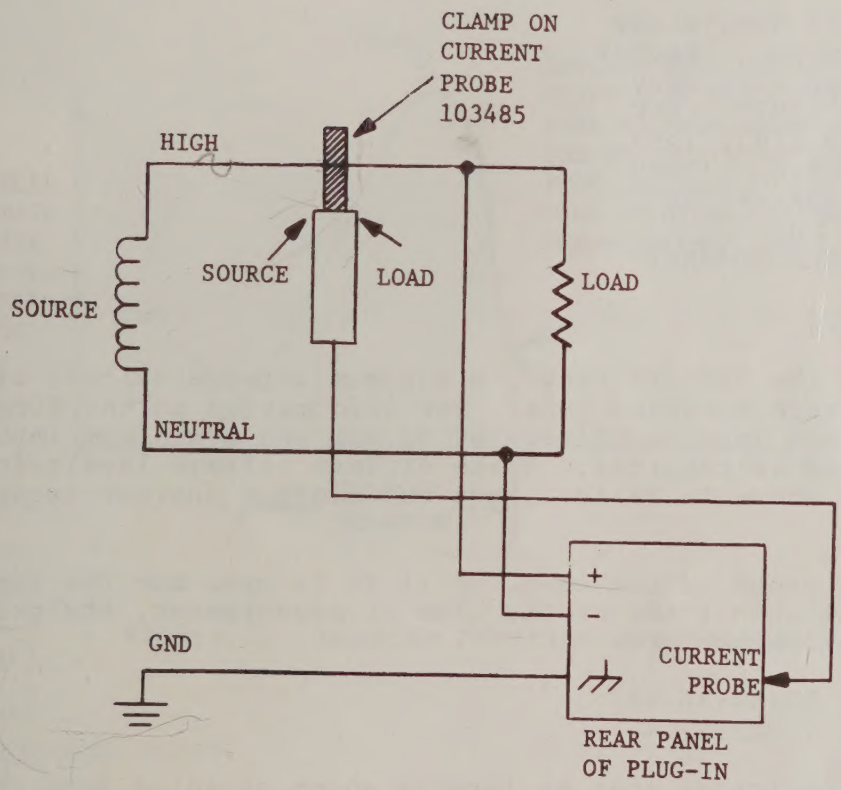


Figure 1. Proper Connections of 626-PA-6001 for Use with Current Probe

1.7 Description of Data Printouts

The only printouts affected by the addition of Option 101 are those for module identification and impulse data.

PROGRAM SUMMARY

When a Program Summary is printed out, the module will be identified as a 626-PA-6001R1 as in the following example.

```
(Read Up) ↑
          IMPULSE SENS 0100V
          FREQ SENS    00.5Hz
          VOLTAGE SENS 002V
          V LOW LIMIT  105V
          V HIGH LIMIT 125V
          RANGE F.S.   200V
            626-PA-6001R1
                CH1
           PROGRAM SUMMARY
```

IMPULSE

When used with the 200V FS range, a minimum impulse voltage of 50 Vpk is required to obtain duration data. For information on the direction of origin, a minimum impulse voltage of 50 Vpk and a minimum impulse current of 1 Amp is required. These minimum voltage levels increase with range, as shown in Table 1, but the minimum current required is not affected.

If the current probe is not used, or if it is used but the impulse current is less than 1 Amp at the time of measurement, the printout will take on the following form:

```
4 IMP 12:34:56.88
+2057V, 089uS
```

This printout indicates that an impulse which deviated from the normal line voltage for 89 microseconds with a peak voltage of 2057 volts was detected on channel 4 at the time shown. The "+" preceding the impulse voltage indicates that the impulse was positive with respect to the "-" or neutral terminal on the 6001 rear panel.

IMPULSE WITH DIRECTION

When the current probe is used and the impulse current is greater than 1 Amp at the time of measurement, the printout will take the following form:

```
4 IMP 12:34:57.00
+2057V, LOAD, 089uS
```

This printouot indicates that an impulse originating from the load, of +2057 volts peak and 89 microseconds in duration occurred at the time shown. If the direction had been from the source, SRCE would be printed in place of LOAD in the example.

Figure 2 illustrates an impulse duration measurement.

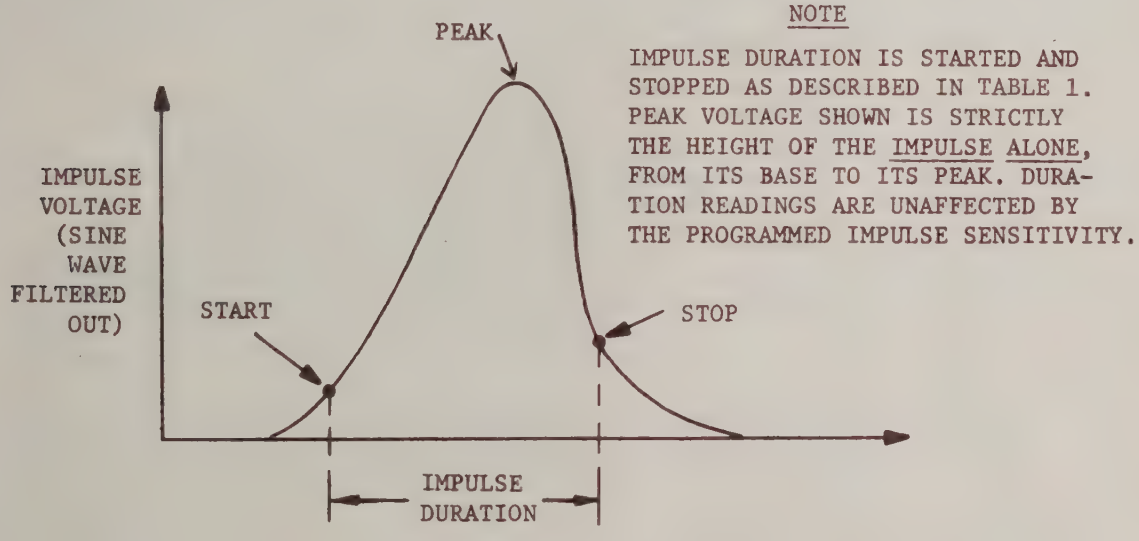

PEAK
NOTE
IMPULSE DURATION IS STARTED AND STOPPED AS DESCRIBED IN TABLE 1. PEAK VOLTAGE SHOWN IS STRICTLY THE HEIGHT OF THE IMPULSE ALONE, FROM ITS BASE TO ITS PEAK. DURATION READINGS ARE UNAFFECTED BY THE PROGRAMMED IMPULSE SENSITIVITY.
IMPULSE VOLTAGE (SINE WAVE FILTERED OUT)
START
STOP
IMPULSE DURATION

Figure 2. Impulse Duration Measurement

1.8 Printout Modes

Printout modes and calibration signals remain the same as in the standard 6001 described in TM-106705.

2 IMPULSE AREA/DIRECTION OPTION, OPTION 102 FOR 626-PA-6001 SERIES (NOT COMPATIBLE WITH OPTION 101)

2.1 Introduction

The following paragraphs describe the differences between the 6001 with Option 102 and the standard 6001.

NOTE

The following data supersedes that found in TM-106705 unless otherwise stated.

2.2 Purpose

Option 102 has no effect on the line frequency measurements of the 6001 described in TM-106705. It also does not affect the measurement of impulse polarity and peak voltage. Option 102 is designed to provide information on impulse area. In addition, if the current probe is used, direction of origin will be determined for impulses having a current of 1 Amp or greater at the time of measurement.

2.3 Equipment Characteristics

Technical specifications for Option 102 are listed in Table 2. All specifications for the 6001, listed in Table 1 of TM-106705, still apply.

Table 2. 626-PA-6001 Option 102 Technical Specifications

IMPULSE AREA

Ranges:
- 200V F.S. Range 0.0002 to 0.2046 V-Sec
- 400V F.S. Range 0.0004 to 0.4058 V-Sec
- 600V F.S. Range 0.0008 to 0.8116 V-Sec

Accuracy: ±10% of reading, ±0.1% of F.S. for 1/2 sinewave pulses up to 100 uSec duration greater than 100 Vpk*. Typically -20% at 200 uSec, -50% at 500 uSec.

* 100 Vpk on 200V F.S. Range
200 Vpk on 400V F.S. Range
400 Vpk on 600V F.S. Range

Timing Reference Points: Start at 25V** - stop at 30% of Vpk.

** 25V on 200 Vrms Range
50V on 400 Vrms Range
100V on 600 Vrms Range

IMPULSE DIRECTION OF ORIGIN

Minimum Impulse Current: 1 Amp for 0.1 uSec before and after measurement.

Minimum Impulse Voltages:
- 50 Vpk on 200 Vrms Range
- 100 Vpk on 400 Vrms Range
- 200 Vpk on 600 Vrms Range

2.4 Installation in Mainframe

The module is installed in the mainframe in the same manner as the standard 6001 described in TM-106705.

2.5 Connections to the Module

Connecting the 6001 to the line to be monitored is the same as described in TM-106705. If impulse direction information is required, the current probe must be connected in the following manner.

a.) Turn off AC power to the line that is to be monitored.

b.) Attach the current probe connector to its mating connector on the rear panel of the 6001.

c.) Install current probe on the line which is connected to the "+" voltage terminal of the corresponding channel, being sure that the LOAD and SOURCE markings on the probe are oriented such that SOURCE is toward incoming power. Proper connections are shown in Figure 1.

d.) Reapply AC power.

Note: Printouts of impulse direction of origin will correlate with the orientation of the LOAD and SOURCE markings on the current probe.

2.6 Operating the 6001 with Option 102

Operation of the 6001 with Option 102 requires no additional programming steps. Programming is therefore the same as described in TM-106705.

2.7 Description of Data Printouts

The only printouts affected by the addition of Option 102 are those for module identification and impulse data.

PROGRAM SUMMARY

When a Program Summary is printed out, the module will be identified as a 626-PA-6001R2 as in the following example.

```
          IMPULSE SENS     0100V
          FREQ SENS        005.Hz
          VOLTAGE SENS     002V
          V LOW LIMIT      105V
    ↑     V HIGH LIMIT     125V
          RANGE F.S.       200V
             626-PA-6001R2
(Read            CH1
  Up)      PROGRAM SUMMARY
```

IMPULSE

When used with the 200V FS range, a minimum impulse voltage of 50 Vpk is required to obtain area data. For information on the direction of origin, a minimum impulse voltage of 50 Vpk and a minimum impulse current of 1 Amp is required. These minimum voltage levels increase with range, as shown in Table 2, but the minimum current required is not affected.

If the current probe is not used, or if it is used but the impulse current is less than 1 Amp at the time of measurement, the printout will take on the following form:

```
4 IMP 12:34:56.88
0.0156 V-SEC
+2057V
```

This printout indicates that an impulse which deviated from the normal line voltage with an area of 0.0156V-Sec and a peak voltage of 2057 volts was detected on channel 4 at the time shown. The "+" preceding the impulse voltage indicates that the impulse was positive with respect to the "-" or neutral terminal on the 6001 rear panel.

IMPULSE WITH DIRECTION

When the current probe is used and the impulse current is greater than 1 Amp at the time of measurement, the printout will take the following form:

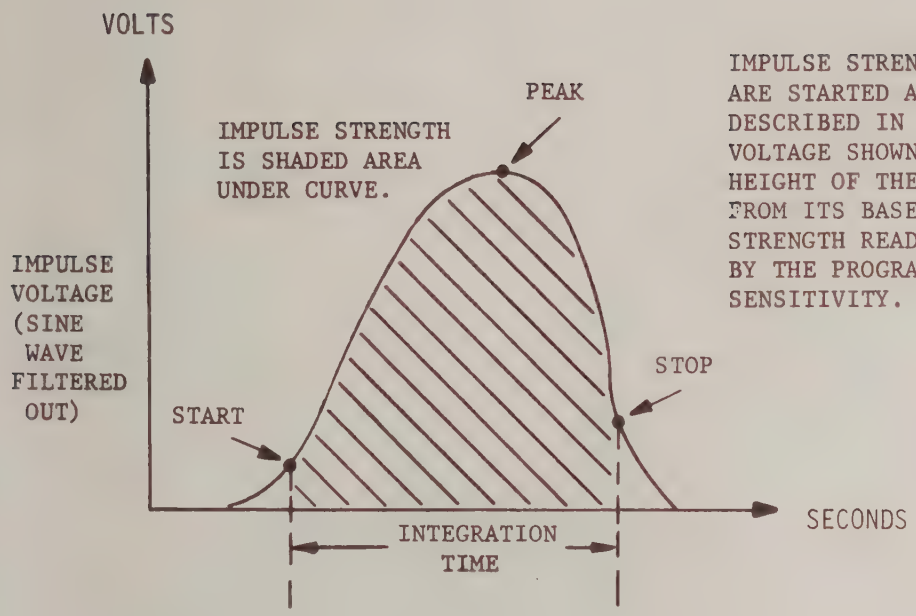
```
4 IMP 12:34:57.00
0.0156 V-SEC
+2057V, LOAD
```

This printout indicates that an impulse originating from the load, of +2057 volts peak and an area of 0.0256V-Sec, occurred at the time shown. If the direction had been from the source, SRCE would be printed in place of LOAD in the example.

Figure 3 illustrates an impulse strength (area) measurement.

2.8 Printout Modes

Printout modes and calibration signals remain the same as in the standard 6001 described in TM-106705.



NOTE

IMPULSE STRENGTH MEASUREMENTS ARE STARTED AND STOPPED AS DESCRIBED IN TABLE 2. PEAK VOLTAGE SHOWN IS STRICTLY THE HEIGHT OF THE IMPULSE ALONE, FROM ITS BASE TO ITS PEAK. STRENGTH READINGS ARE UNAFFECTED BY THE PROGRAMMED IMPULSE SENSITIVITY.

Figure 3. Impulse Strength Measurement

3 FACTORY REPAIR

When factory repair is desired, proceed as follows:

1. Contact the Dranetz Engineering Customer Service Department and obtain an Authorization Number.

2. Fill out the Repair/Service Order enclosed in this manual and ship it with the equipment to the Customer Service Department.

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